

Claims

What is claimed is:

1. A process for the production of multi-layer coatings in light metallic color shades, comprising the successive steps:

- (1) applying a 5 to 20 μm thick base coat layer to a pre-coated substrate,
- (2) applying a clear coat layer onto the base coat layer,
- (3) jointly curing the base coat and clear coat layers,

wherein the base coat layer is applied from an unmodified water-borne metallic base coat which has a ratio by weight of pigment content to resin solids content of 0.3:1 to 0.45:1, wherein the pigment content consists 60 to 100% by weight of at least one non-leafing aluminum pigment with a platelet thickness of over 100 to 500 nm and 0 to 40% by weight of at least one pigment different from aluminum pigments, wherein the pigment(s) different from aluminum pigments are selected by nature and quantity in such a way that the multi-layer coating obtained on the conclusion of process step (3) exhibits a brightness L^* (according to CIEL*a*b*, DIN 6174), measured at an illumination angle of 45 degrees to the perpendicular and an observation angle of 15 degrees to the specular, of at least 80 units and wherein at least 50% by weight of the non-leafing aluminum pigment(s) are selected from the group consisting of non-leafing aluminum pigments passivated by chromating, non-leafing aluminum pigments coated with a silicon-oxygen network and combinations thereof.

2. A process for the production of multi-layer coatings in light metallic color shades, comprising the successive steps:

- (1) applying a 10 to 30 μm thick base coat layer to a substrate provided with an EDC primer,
- (2) applying a clear coat layer onto the base coat layer,

(3) jointly curing the base coat and clear coat layers, wherein the base coat layer is applied in a first layer and in a second layer; the first layer comprises a modified water-borne metallic base coat produced by mixing an unmodified water-borne metallic base coat with an admixture component and the second layer comprises the unmodified water-borne metallic base coat, wherein the unmodified water-borne metallic base coat has a ratio by weight of pigment content to resin solids content of 0.3:1 to 0.45:1, wherein the pigment content consists 60 to 100% by weight of at least one non-leafing aluminum pigment with a platelet thickness of over 100 to 500 nm and 0 to 40% by weight of at least one pigment different from aluminum pigments, wherein the pigment(s) different from aluminum pigments are selected by nature and quantity in such a way that the multi-layer coating obtained on the conclusion of process step (3) exhibits a brightness L^* (according to CIEL*a*b*, DIN 6174), measured at an illumination angle of 45 degrees to the perpendicular and an observation angle of 15 degrees to the specular, of at least 80 units and wherein at least 50% by weight of the non-leafing aluminum pigment(s) are selected from the group consisting of non-leafing aluminum pigments passivated by chromating, non-leafing aluminum pigments coated with a silicon-oxygen network and combinations thereof.

3. The process of claim 2, wherein the layer thickness of the base coat layer applied from the modified water-borne metallic base coat is 5 to 20 μm and the layer thickness of the base coat layer applied from the unmodified water-borne metallic base coat is 2 to 10 μm .

4. The process of claim 2 or 3, wherein the modified water-borne metallic base coat is applied by electrostatically-assisted high-speed rotary atomization and the unmodified water-borne metallic base coat is pneumatically spray-applied.

5. The process of claim 2, 3 or 4, wherein the admixture component imparts primer surfacer properties.
6. The process of any one of claims 2 to 5, wherein the admixture component is selected from the group consisting of polyisocyanate cross-linking agents, polyurethane resins and filler pastes.
7. The process of any one of the preceding claims, wherein the pigment content of the unmodified water-borne metallic base coats consists 90 to 100% by weight of at least one non-leafing aluminum pigment with a platelet thickness of over 100 to 500 nm and 0 to 10% by weight of at least one pigment different from aluminum pigments.
8. The process of any one of the preceding claims, wherein at least 70% by weight of the non-leafing aluminum pigment(s) are selected from the group consisting of non-leafing aluminum pigments passivated by chromating, non-leafing aluminum pigments coated with a silicon-oxygen network and combinations thereof.
9. The process of any one of claims 1 to 7, wherein all of the non-leafing aluminum pigment(s) are selected from the group consisting of non-leafing aluminum pigments passivated by chromating, non-leafing aluminum pigments coated with a silicon-oxygen network and combinations thereof.
10. The process of any one of claims 1 to 7, wherein all of the non-leafing aluminum pigment(s) are non-leafing aluminum pigment(s) coated with a silicon-oxygen network.

11. The process of any one of the preceding claims, wherein the substrates are selected from the group consisting of automotive bodies and body parts.

12. Substrates coated according to the process of any one of the preceding claims.